

## **REMARKS**

Claims 1-17 remain pending in the application, in which claims 1 and 8 are currently amended. Applicant respectfully requests allowance of the pending claims based on following discussions.

### **Rejections under 35 USC 112**

Claims 1-17 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 1 and 8 are rejected for it is unclear as to what “its” refers to.

In response, the term “its” has been deleted from claims 1 and 8. Thus, Applicant respectfully submits that the rejections under 35 USC 112 have been overcome.

### **Rejections under 35 USC 103**

Claims 1-3, 5-7 and 15 are rejected under 35 USC 103(a) as being unpatentable over US Patent No. 6,446,651 to Abbel (hereinafter referred to as “Abbel”) in view of US Patent No. 6,135,709 to Stones (hereinafter referred to as Stones).

Independent claim 1, as amended, is directed to a vacuum pumping system having a vacuum pumping arrangement comprising: a drive shaft; a motor for driving the drive shaft; a molecular pumping mechanism comprising turbomolecular pumping means; a backing pumping mechanism, wherein the drive shaft is for driving the molecular pumping mechanism and the backing pumping mechanism; and an evacuation means for evacuating at least the turbomolecular pumping means prior to start up of the molecular

pumping mechanism, wherein the evacuation means is decoupled from the molecular pumping mechanism in a manner that exhaust fluid from the molecular pumping means bypasses the evacuation means during normal operation of the molecular pumping means.

The amended claim language “*wherein the evacuation means is decoupled from the molecular pumping mechanism in a manner that exhaust fluid from the molecular pumping means bypasses the evacuation means during normal operation of the*” is supported by the specification. For example, the specification provides “[d]uring normal operation, valves 82 and 78 are opened whilst valve 80 is closed.” *See, page 12, lines 18-20.* As shown in FIG. 4 of the application, when valve 82 is opened and valve 80 is closed, exhaust fluid from the molecular pumping means 10 bypasses the evacuation means 74 via valve 82.

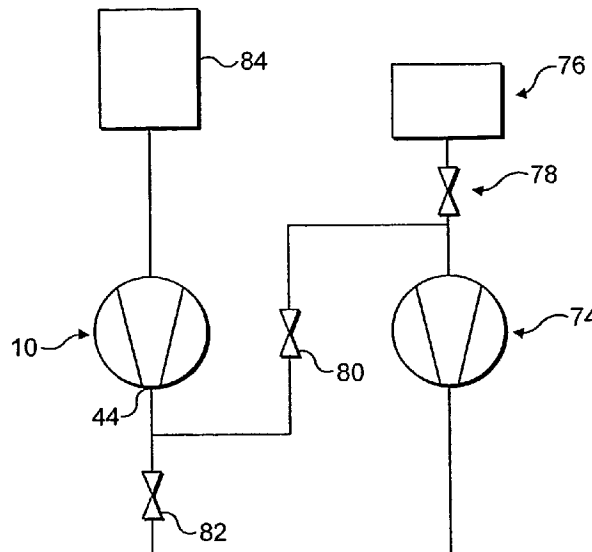
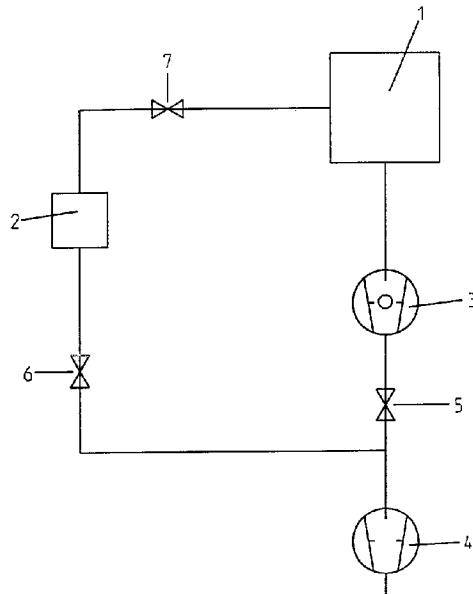


FIG. 4

Abbel does not teach the claim language “*wherein the evacuation means is decoupled from the molecular pumping mechanism in a manner that exhaust fluid from the molecular pumping means bypasses the evacuation means during normal operation of the molecular pumping means.*” Applicant acknowledges that in Abbel, high vacuum pump 3 and vacuum pump 4 may run separately. However, the exhaust fluid from high vacuum pump 3 can never bypass vacuum pump 4 during its normal operation. The valves 5 and 6 are opened and closed in an alternate manner. *See, col. 2 line 66 – col.3 line 8.* As shown in the drawing of Abbel below, when valve 5 is opened and valve 6 closed, the exhaust fluid from high vacuum pump 3 is discharged through vacuum pump 4. When valve 5 is closed and valve 6 opened, high vacuum pump 3 is blocked, and therefore not in a normal operation mode. In any event, in no circumstances the exhaust fluid from high vacuum pump 3 bypasses vacuum pump 4.



Stones does not teach or suggest the claim language, because it is cited for its disclosure of a backing pump, not for how the evacuation means and the molecular pumping means coordinate.

Because the combination of Abbel and Stones still fails to teach each and every element of the claimed invention, claim 1 is patentable over Abbel in view of Stones under section 35 USC 103(a). Accordingly, claims 2-3, 5-7 and 15 that depend from independent claim 1 and include all the limitations recited therein are also patentable over Abbel and Stones under 35 USC 103(a).

Claim 1 is rejected under 35 USC 103(a) as being unpatentable over US Patent No. 6,161,576 to Maher et al. (hereinafter referred to as “Maher”) in view of Stones.

Maher does not teach the claim language “*wherein the evacuation means is decoupled from the molecular pumping means... during normal operation of the molecular pumping means.*” Examiner equates Maher’s turbo pump and roughing pump to the claimed molecular pumping means and evacuation means, respectively. *See, the Office Action, page 6.* In Maher, as the turbo pump is starting up, the gate valve and valve V1 are closed while valve V4 is opened, thereby enabling the roughing pump to evacuate the turbo pump. *See, col. 3, lines 66-68.* Then, valve V4 is closed and the valve V1 is opened, thereby enabling the roughing pump to evacuate the chamber. *See, col. 3 line 68 – col. 4 line 1.* Up until now, the turbo pump is still in the initiation process as it is still disconnected from the chamber by the closed gate valve. The gate valve is then opened and the turbo pump and chamber are both under the roughing pressure. *See, col. 4, lines 1-8.* This is when the turbo pump is in normal operation of evacuating the

chamber. Since, in normal operation, the turbo pump is under the roughing pressure, the turbo pump and rough pump are not decoupled.

Moreover, Maher does not teach the claim language “*exhaust fluid from the molecular pumping means bypasses the evacuation means during normal operation of the molecular pumping means.*” As clearly illustrated in FIGs. 1 and 2, the exhaust fluid from the turbo pump is either blocked from or passed to the roughing pump by valve V4. There is no bypass for the exhaust fluid of the turbo pump to go around the roughing pump.

It is noted that while Maher mentions valves V1 and V2 being bypass valves, they bypass in the sense that they connect both sides of the gate valve in the foreline between the chamber and the turbo pump. Valves V1 and V2 do not bypass the exhaust fluid from the turbo pump around the roughing pump.

Stones does not teach or suggest the claim languages, because it is cited for its disclosure of a backing pump, not for how the evacuation means and the molecular pumping means coordinate.

Because the combination of Maher and Stones still fails to teach each and every element of the claimed invention, claim 1 is patentable over Abbel in view of Stones under section 35 USC 103(a).

Claims 4 and 16 are rejected under 35 USC 103(a) as being unpatentable over Abbel, in view of Stones and further in view of US Patent No. 4,577,465 to Olsen (hereinafter referred to as “Olsen”).

As discussed above, independent claim 1 as amended is patentable over the cited prior art references under 35 USC 103(a). Accordingly, claims 4 and 16 that depend from claim 1 and include all the limitations recited therein are also patentable over Abbel, Stones and Olsen under section 103.

Claims 8, 9, 11, 13, 14 and 17 are rejected under 35 USC §103(a) as being unpatentable over Maher in view of Stones.

Independent claim 8, as amended, is directed to a method that decouples the evacuation means from the molecular pumping mechanism in a manner that exhaust fluid from the molecular pumping means bypasses the evacuation means during its normal operation of the molecular pumping means. As discussed above, neither Maher nor Stones does teach or suggest such feature. Thus, claim 8 is patentable over Maher and Stones under section 103.

Accordingly, claims 9, 11, 13, 14 and 17 that depend from independent claim 8 and include all the limitations recited therein are also patentable over Maher and Stones under section 103.

Claim 10 is rejected under 35 USC 103(a) as being unpatentable over Maher in view of Stones, and further in view of US Patent No. 6,474,949 to Arai et al. (hereinafter referred to as “Arai”).

As discussed above, independent claim 8 as amended is patentable over the cited prior art references under section 103. Accordingly, claim 10 that depends on claim 1

and includes all the limitations recited therein is also patentable over Maher, Stones and Arai under section 103.

Claim 12 is rejected under 35 USC 103(a) as being unpatentable over Maher in view of Stones, and further in view of Olsen.

As discussed above, independent claim 8 as amended is patentable over the cited prior art references under section 103. Accordingly, claim 12 that depends on claim 8 and includes all the limitations recited therein is also patentable over Maher, Stones and Olsen under section 103.

### **CONCLUSION**

Applicant has made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Applicant does not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Respectfully submitted,

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